ENVIRONMENTAL IDENTITY DEVELOPMENT IN A RURAL SOUTHCENTRAL ALASKA ELEMENTARY SCHOOL BIRDING CLUB

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Abstract

Research suggests that birding may help children develop a healthy relation with the natural world, but no prior studies have explicitly explored how children experience environmental identity development in birding clubs. The purpose of this qualitative phenomenological study was to investigate the environmental identity development of 3rd grade children participating in an after-school birding club within a rural, isolated island community in southcentral Alaska. Environmental identity is the way that individuals perceive themselves with regards to their environment. As environmental identity develops, children are faced with a series of tensions at the different stages of the model. These stages include trust in nature versus mistrust in nature, spatial autonomy versus environmental shame, environmental competency versus environmental disdain, and environmental action versus environmental harm. Children taking part in this study conducted Sensory Tours at birding club. The Sensory Tours involved children wearing video recorders on their bodies as they went about their activities. The video recorders captured children's interactions with one another and with their environment during the outdoor portions of birding club. Afterwards, in what is referred to as video-stimulated recall, the children met as a group to discuss the video data they collected. Data gained from the Sensory Tours and video-stimulated recall were sorted into categories based on the different stages of the environmental identity model. The results indicated that the children established trust in nature prior to entering birding club, which is to say that they felt a level of comfort and familiarity with the outdoors. The exception to this was that brown bears made most children feel uncomfortable, which resulted in some disrespectful behavior towards bears. The children also had negative perceptions of pushki due to the plant's capacity to cause rashes, even though the plant has beneficial uses as well. Spatial autonomy, or the sense of freedom and independence in nature,

was supported when children climbed boulders and developed their own methods for navigating boardwalks and descending stairs. Children gained environmental competency from birding club in the form of new knowledge and skills related to birding in the outdoors. These included the ability to identify birds by sight and sound, nest search, identify pushki, and pack for the outdoors. Opportunities for children to care for the environment by engaging in environmental action were limited, although the children did decorate birdhouses and learned to maintain a respectful distance from wildlife. Some children were conflicted about whether or not picking salmonberry flowers constituted environmental harm. In future years, more emphasis should be placed on educating children about living in harmony with brown bears, harvesting salmonberries sustainably, and the traditional uses of pushki. Birding club should also include more structured opportunities for children to engage in action for the environment. This will support children as they continue to form deeper connections between themselves and their environment. Finally, the results of this study have numerous applications for teaching environmental education in the general education classroom. They indicate that teachers should assess students based on their environmental identity development, explicitly teach perseverance and empathy to students, provide students with a greater sense of agency in their schoolwork, and encourage relationship building in the classroom.

Keywords: birding club, elementary school, children, environmental identity development, southcentral Alaska, rural

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Chapter 1: Introduction

Our planet is faced with a plethora of conflicts due to human-caused environmental degradation (Clayton and Opotow, 2003). In order to persevere in the face of these challenges, it is imperative that we understand how to raise children who grow to care and act for the environment, meaning that they have healthy environmental identities. While there are many facets to self-identity, environmental identity in particular is concerned with how an individual views their self in relation to the natural environment (Sets & Biga, 2003; Clayton & Opotow, 2003). The environmental identity development model is a framework to understand how individuals, with the support of others, progress through various stages of development characterized by inner and outer tensions (Green, 2017; Green, 2018a). However, relatively little is known about the environmental identity development of children, as the environmental identity development model was only first introduced in 2016 (Green, Kalvaitis, & Worster, 2016; Green, 2018a).

The environmental identity development model was initially intended for use with very young children, but more recently was reconsidered as applicable to individuals of all age groups (Green, 2018a). Because "identity formation is informed by various sociocultural, political, geographical, and . . . spiritual contexts" (Green, 2018a, p. XIX), it is likely that how children experience environmental identity formation may vary between rural and urban settings and between pre-school, elementary, middle school and high school settings (Green, 2018a). The model has been applied to such contexts as children living in a rural Alaska Native community, young girls taking part in a 'Girls on Ice' glacier exploration program, and freshman high school students learning about local ecology (Green, 2018a), but never to an after-school birding club. Prior research suggests that children who bird watch are "generally more appreciative,

knowledgeable, and concerned about animals" (Kellert, 1984, p. 58). However, it is unclear what makes bird watching conducive to healthy environmental identity development.

Prior studies on the effectiveness of environmental education programs have traditionally focused on quantitative research methods, including conducting pre and posttests to quantify the success of a program (Green, 2015). While these study methods may help determine whether or not a program was successful, they do not provide important information about children's experiences in the program to help determine why the program was or was not successful (Green, 2015).

This birding club study focused solely on using qualitative research methods in order to gain in-depth information about participant experiences from the children's perspectives. It applied the environmental identity model in a new context by examining how 3rd grade children experienced environmental identity development as they attended an after-school birding club in a rural, isolated island community in southcentral Alaska. The results from this study are applicable not only to understanding how to better support children's environmental identity development in birding clubs, they also shed light on how to better support environmental identity development in the general education classroom.

Chapter 2: Literature Review

Identity Theory

Identity theory holds that each individual has a hierarchy of self-identities (Stets & Biga, 2003). Within this hierarchy, identities continually interact with and work towards alignment with each another. Identities are further shaped by interactions with the social environmental. Behavior is guided by the multi-dimensionality of self-identities (Stets & Biga, 2003).

From a social perspective, identity is thought of as "being recognized as a certain 'kind of person' in a given context" (Gee, 2000, p. 99). Self-verification is what occurs when there is alignment between self-identity and the way that others perceive the self. This results in positive feelings of self and others, while lack of self-verification can lead to depression and distrust (Burke & Stets, 1999).

A Related Theory: Attitude Theory

A related theory that has also been used to predict and explain the behavior of individuals is attitude theory (Stets & Biga, 2003). According to Ajzen & Fishbein, attitude theory is based on the notion that an individual's choices and decisions are governed by their attitude about something (as cited in Stets & Biga, 2003). Understanding attitude alone is therefore thought to help predict future behavior.

Unlike identity theory, attitude theory does not account for social, moral, or multi-dimensional complexities (Stets & Biga, 2003). As such, identity theory provides a more holistic understanding of individuals and their behavior, encompassing aspects of attitude theory in addition to other factors that influence behavior (Stets & Biga, 2003). For these reasons, while this study includes background information gained from studies related to attitude theory, its primary research focus was on environmental identity development.

Environmental Identity and its Development

Environmental identity is a facet of identity theory. It is defined as the way a person self-identifies with regards to the natural environment (Sets & Biga, 2003; Clayton & Opotow, 2003). Because of the multifaceted nature of identity, environmental identity occurs simultaneously with other self-identities. Social factors also influence an individual's environmental identity and consequent behavior (Clayton & Opotow, 2003). This means that environmental identity can change over time and depends on the social situation. All of these factors make environmental identity a complicated theory to study (Stapleton, 2015), especially when applying it to the lived experiences of real individuals.

While an individual's environmental identity can change over time, it is clear that some individuals have much stronger environmental identities than others. Stapleton (2015) puts this nicely, "Environmental identity could be envisioned as a section within an individual's identity binder. The section could be thick and/or towards the front of the binder, it could be an appendix, or it could be missing altogether" (p. 101). But why is it that some individuals seem to have much thicker sections than others? This leads us to the concept of environmental identity development.

Multiple theories of environmental identity development have been proposed. While some theories focus on the environmental identity development of older environmentalists (Stapleton, 2015), work by Green, Kalvaitis and Worster (2016) sought to explain environmental identity within the context of child development and sociological theories of childhood. They propose that environmental identity development occurs in progressions similar to Erikson's four stages of psychosocial development, where each stage consists of an external and internal dilemma that must be resolved to reach a positive outcome (Green, 2018a; Green et al., 2016).

Because this theory was developed explicitly with regards to young children's environmental identity development, it is well suited for examining the role of environmental education with 3rd grade students. The following represents the foundation and three progressions of this theory's environmental identity model:

Trust in Nature versus Mistrust in Nature

The foundation of a child's environmental identity development is trust in nature versus mistrust in nature (Green, 2018a; Green et al., 2016). During this stage of development, individuals form a sense of comfort or discomfort in nature. Healthy development is facilitated by caregivers who allow children to experience nature in a safe and secure manner while providing plenty of opportunities for them to use their own senses (Green, 2018a; Green et al., 2016).

Spatial Autonomy versus Environmental Shame

Once individuals develop a healthy sense of trust in nature, they typically desire greater independence in exploring the outdoors. This is referred to as spatial autonomy, which is the first progression in children's environmental identity development (Green, 2018a; Green et al., 2016). When children exhibit spatial autonomy, they experience an enhanced sense of confidence and freedom in nature, which allows them to form their own sense of place in nature (Green, 2018b). The opposite of spatial autonomy is environmental shame. When children experience environmental shame they do not feel comfortable gaining independence in nature, and instead retreat from nature to the comfort of adults (Green, 2018a; Green et al., 2016).

Environmental Competency versus Environmental Disdain

The second progression in a child's environmental identity development is environmental competency versus environmental disdain (Green, 2018a; Green et al., 2016). Children develop

environmental competency when they form knowledge and skills in nature. The formation of knowledge and skills requires that children be given the freedom to experiment in nature. Children who lack opportunities to play and experiment outdoors may develop a sense of environmental disdain, or disrespect towards the environment (Green, 2018a; Green et al., 2016).

Environmental Action versus Environmental Harm

Environmental action versus environmental harm is the third and final progression in environmental identity development (Green, 2018a; Green et al., 2016). When children engage in environmental action, they use their knowledge and skills to act in a positive way for the environment. Environmental harm, on the other hand, occurs when children choose to act in ways that harm the environment (Green, 2018a; Green et al., 2016).

Environmental Identity Development in Environmental Education Programs

Numerous quantitative studies have evaluated how effectively environmental education programs impact children's environmental attitude, knowledge, and behavior (Ernst & Theimer, 2011; Ajiboye & Silo, 2008). While most do not explicitly consider environmental identity development, their focus on children's attitudes and behavior is closely related. Often, these studies involve conducting pre and posttests on children, with or without control groups, to determine program outcomes. One of the limitations to this type of pre and posttest study design, however, is that it does not provide in-depth information about children's experiences from the child's perspective (Green, 2015). Without understanding how children experience environmental education programs, it is difficult to get a full picture of the evolution of their environmental identity development within a program. Researchers are often left wondering why an environmental education program was or was not successful (Ernst & Theimer, 2011).

Studies that delve deeper into children's experiences tend to be mixed-methods or qualitative in nature. An example of this is the mixed-methods study by Dettman-Easler and Pease (1999) that looked at the impact of participation in environmental education programs on children's attitudes towards wildlife. Children in this study completed a pre and posttest, in addition to answering interview questions about their learning, enjoyment, and attitude development throughout the program. Unfortunately, the results and discussion of this study focused primarily on the quantitative aspects of the research. A brief summary of the children's responses to interview questions was provided, but there was not enough information to get an in-depth picture of children's unique perspectives. This often occurs with mixed-methods studies.

In order to gain an in-depth understanding of children's perspectives, this research study focused exclusively on the qualitative research methods of Sensory Tours and video-stimulated recall (Green, 2016). In doing so, it sought to better understand children's experiences in environmental education programs as they pertained to environmental identity development. A number of other researchers have used qualitative methods to examine the role of environmental education programs in environmental identity development (Knapp & Poff, 2001), but none have applied the environmental identity development model within the context of a 3rd grade children attending an after-school birding club in a rural, isolated island community in southcentral Alaska.

Environmental Identity Development in Birding Clubs

Relatively little is known about the environmental identity development of children who are involved in birding, but the literature on adult birders does provide some possible clues. For example, a study on the specialization and motivations of a Canadian population of adult

birdwatchers found that birders have four types of motivations: affiliation, achievement, conservation, and appreciation (McFarlane, 1994). Here, affiliation refers to the socialization that can occur during bird watching, achievement means distinguishing oneself as a competent birder, conservation refers to contributing, helping and learning about the environment, and appreciation means enjoying the outdoor experience (McFarlane, 1994). Whether these same birding motivations occur in children is unknown. It is also unknown how these motivations might impact environmental identity development. Nonetheless, it is quite possible that at least some of these factors might play a role in children's environmental identity development.

With the exception of a 1984 study by Kellert, birding clubs have not been studied for their impact on children's environmental identity development. The study by Kellert examined the knowledge and attitudes of children towards animals. It found that "children who bird watched, belonged to animal-related clubs, or hunted… were generally more appreciative, knowledgeable, and concerned about animals" (Kellert, 1984, p. 58). Whether this relationship was the result of correlation or causation is not indicated in this study. Further research needs to be conducted to explore the relationship between birding and children's environmental identity development.

It is important to know if birding supports healthy environmental identity development because, as it stands, many children do not participate in birding, especially as they grow older. For example, a national study on children's time spent outdoors found that the majority of children spent two or more hours outdoors each day (Larson, Green, & Cordell, 2011). However, much of this outdoor time was spent playing, biking, running, jogging, or using technology. Nature-related activities such as bird watching and wildlife viewing were much less common, with only 30.7% of children participating in these activities (Larson et al., 2011). For

children ages 6-9, this number rose to 39.8% of children participating, and for children ages 10-12, it rose to 40.8% of children participating (Larson et al., 2011). These statistics show that, especially as children grow older, nature-based activities such as birding become less frequent over other outdoor activities. If birding does, in fact, lend itself well to environmental identity development, then children are missing out on important opportunities to bird, and more emphasis should be placed on connecting children of all ages with birding in the future.

Additionally, by gaining deeper insight into how children experience environmental identity development in a birding club, it may be possible to determine specific ways to structure birding clubs so as to best support children's environmental identity development. The results of this study are applicable not only to birding clubs, but to environmental education activities in the general education classroom as well. This is especially important as general education classrooms have the unique potential to positively impact all students' environmental identities, not just those students in birding clubs.

Research Question

This study addressed the following research question: How is environmental identity development exhibited by children attending an after-school birding club in a rural, isolated island community in southcentral Alaska? In doing so, it builds from the understanding of the environmental identity development model, specifically as it pertains to children's environmental education and birding.

Chapter 3: Methods

Study Site

This study took place in a town with a population of approximately 6,000 people (U.S. Census Bureau, 2015). The town is located in southcentral Alaska, on an isolated island where aircrafts and boats are the only means of transportation to the mainland. It is known for its commercial, sport, and subsistence fishing, as well as the U.S. Coast Guard presence in the community. The borough's population is predominately of white, Asian, Alaska Native and Hispanic descent (U.S. Census Bureau, 2015). 55% of the population is white, 22.2% Asian, 12.8% Alaska Native, and 8.8% Hispanic, with the Alaska Native population comprised predominately of Alutiiq people (U.S. Census Bureau, 2015). This research occurred in conjunction with an afterschool birding club conducted with third grade students at one of the four elementary schools in the town. All procedures for this study were approved of by an Institutional Review Board (see Appendix A), the principal of the school where the birding club took place, and the school district's superintendent (see Appendix B), prior to the beginning of the study.

Methodology

Phenomenological methodologies formed the basis of this study. According to O'Leary (2014, p. 138), phenomenology is the "study of phenomena as they present themselves in individuals' direct awareness and experience." In phenomenological studies, reality is considered subjective, as it is individuals and their perceptions and experiences that form the basis of reality (O'Leary, 2014). This aligns well with the environmental identity development model, because environmental identity is formed both independently and through perceptions of

experiences gained during environmental and social interactions (Green, 2018a; Stets and Biga, 2003).

The phenomenon that was the focus of this study was children's interactions and experiences with the natural world during birding club. In order to gain a deeper understanding of these experiences, children engaged in Sensory Tours (Green, 2016) and video-stimulated recall (Green, 2016). These methods are complimentary to phenomenological studies because they allow for an in-depth look at different children's experiences. During Sensory Tours, each child video recorded their interactions with one another and with their environment, including what they saw, what they heard, and what they said (Green, 2017). The video-stimulated recall then allowed the children to describe these experiences, including their own perceptions of what it felt like and what they were thinking (O'Leary, 2014).

Participants

Participants were 3rd grade children (ages 8-to-9-years-old) attending an after-school birding club at the elementary school. Any 3rd grade child enrolled at the school could attend birding club so long as their parents approved, they arranged their own transportation after school, and they agreed to behave appropriately. The club size was capped at eleven children and children were admitted into the club based on a first-come, first-served basis. I served both as the researcher for this study and as the primary teacher at birding club. As well, each day there were between two and four additional adults assisting with birding club, including other elementary teachers and adults from the community.

Children were not required to participate in this research study in order to join the birding club. However, of the eleven children who signed up for birding club, all eleven children and their families chose to take part in the research. Children participating in this study included six

females (Beth, Caroline, Jenny, Kali, Sara, and Teri) and five males (Blake, Bruce, Jed, Levi, and Matt). Caroline was absent for the first and fourth days of birding club and Jenny was absent for all but the first day of birding club, although both children attended the video-stimulated recall discussion. The rest of the children were present during all four days of birding club and for the additional video-stimulated recall discussion, which occurred on a final fifth day.

It is important to note that this study aimed to conduct research *with* children, rather than research *on* children. Research *on* children attempts to conceal research from the very children being researched (Green, 2015). This occurs most commonly within quantitative research studies, but can occur within qualitative studies as well (Green, 2015). The research *on* children framework is derived from the belief that children are incapable of understanding the complexities of research and are better off not knowing that they are research subjects. It is also believed that in knowing they are research subjects, they may bias the results of a study.

In accordance with the research *with* children framework, this study required informed assent from the children participating in the research (see Appendix C), as well as the informed consent of their guardians (see Appendix D). An additional script was read to the children prior to the beginning of the first Sensory Tour (see Appendix E). The script reminded the children of the voluntary nature of the research process and what all it entailed. Before putting a video camera on each day, the children were asked if they wanted to wear the camera and were reminded that they were free to take the cameras off at any point during their Sensory Tours.

The use of Sensory Tours as a means of data collection was meant to provide the children with the ability to share their unique experiences throughout the data collection process (Green, 2016). Video-stimulated recall enabled the children to then interpret the Sensory Tour video

data from their own unique point of view and discuss their findings with other children and myself (Green, 2016). Direct quotes from the children were included in the final research report (Green, 2016). This is in line with the research *with* children framework (Green, 2016).

Data Collection and Analysis

Data collection and analysis methods for this study were modeled after a similar study conducted by Green (2017). Green's study examined the environmental identity development of 5-to-7-year-old Alaska Native children living in a rural Native village in western Alaska. While Green's (2017) study was not related to birding and involved a different study population and study location than this study, our two studies were similar in that they both examined children's environmental identity development through the use of Sensory Tours and video-stimulated recall methods.

Children conducted Sensory Tours during the outdoor portions of birding club. Sensory Tours are a relatively new research method (Green, 2016). During Sensory Tours, the children were invited to wear video cameras on their bodies as they went about birding club activities. Children could choose to take the cameras off or turn them off at any point, and they were ultimately in charge of their own tours (Green, 2016). According to Green (2016), Sensory Tours "not only records children's actions and interactions with phenomenon in their environment, it also makes apparent features of the environment of interest to a child that might go unnoticed or be taken for granted by an adult" (p. 281-282). The ability to observe how children interact with specific features of their environment, from the perspective of the child, makes Sensory Tours especially well-suited for studies of environmental identity development at a birding club.

While birding club lasted for four consecutive days, Sensory Tours took place during the first two days of birding club and lasted for approximately 45 minutes each day. Eleven children took place in this study, but there were only five video cameras. To give all eleven children an opportunity to engage in the research process, the children formed groups of two or three and decided amongst themselves who would go first with the video cameras. Halfway through the birding walk, the children offered to hand the video cameras over to their partners. If neither partner wanted to conduct a Sensory Tour at any time during the birding walk, they simply handed their video camera to a nearby adult.

After the completion of birding club, children were invited to meet after school for an additional one-hour video-stimulated recall discussion. This discussion included playback of portions of the videos collected by children. Because the expression of environmental identity depends on the social context of a situation (Clayton & Opotow, 2003), the group nature of this discussion provided further insight into the children's environmental identity. In addition, a video-simulated recall discussion is complimentary to conducting research *with* children (Green, 2016). It provided an opportunity for children to interpret data from their own tour and has the potential to provide insights that only the children can express. Green (2016) refers to this as "an 'insider's perspective' on actions, behaviors, and experiences…" (p. 290).

I gave the following directions to the children at the beginning of the video-stimulated recall discussion: "I will play you back parts of your videos from bird club. Watch the videos quietly. I will stop the videos every once in a while. I will ask you questions about the videos. Raise your hand to answer. You can also ask your own questions. You can reply to the ideas of others as well. I will video you during this time."

Video clips from the Sensory Tours were played for the group. I pre-selected these video clips based on my field observations and review of the video footage. Video clips that potentially aligned with one or more aspects of the environmental identity development model were selected. As the video clips played, I asked the children a series of open-ended questions. The discussion was semi-structured in nature. Semi-structured interviews are interviews that combine pre-established questioning sequences with the ability to depart from this sequence as the conversation evolves (O'Leary, 2014). This provided the children with greater voice in directing the research process. Most of these pre-selected questions were modeled after questions posed during a study of Sensory Tours that was conducted by Green (2016). The questions were as follows:

- What were you thinking about when you watched the movie?
- What did you notice?
- What did you hear?
- What did you see?
- What are you wondering about?
- What was your favorite part?
- What do you think of birding?

The discussion was video recorded and analyzed alongside the Sensory Tour videos. I transcribed dialog from the Sensory Tour video clips as well as from the discussion that occurred during the video-stimulated recall. I also recorded notes about the social and environmental interactions that accompanied this dialog. These methods were similar to the ones utilized in a 2017 study by Green of 5-to-7-year-olds living in a rural Alaska Native village.

Transcribed data was reviewed multiple times as I sorted the children's experiences in birding club into one or more of the following categories: trust in nature versus mistrust in nature, spatial autonomy versus environmental shame, environmental competency versus environmental disdain, and environmental action versus environmental harm. These categories were selected because they aligned with the foundation and three progressions of the environmental identity development model. Again, these categories also aligned with how Green (2017) presented her findings.

Direct quotes from children are included in the results section, along with my own observations. In the discussion section, I outline how children experienced environmental identity development in birding club. I also consider ways to improve the education of children at this club, given the unique flora, fauna, and culture that they are exposed to. I recommend areas of focus for additional research. Finally, I consider applications for environmental education in the general education classroom.

Study Limitations

The qualitative nature of this study meant that it involved non-random sampling (O'Leary, 2014). Sample size was relatively small, and the study location was limited to one elementary school located within a rural, isolated island community in southcentral Alaska. This allowed for an in-depth analysis of the children's experiences, which was the goal of this study, but also meant that study results were not generalizable to all children that attend all after-school birding clubs.

Another consideration is that I was not only the researcher at this study site but also the head of birding club and the 3rd grade teacher to ten of the eleven children who took part in this study. My position of authority over these children and the relationships I previously built with

them may have impacted some of the responses that they gave. Sensory Tours have the potential to help mitigate this impact by providing the children, rather than the researcher, with control over how they wish to lead their own tour (Green, 2016).

Ethical Considerations

The participants of this study were children, who are considered to be a vulnerable research population. In recognizing this, prior to participating in this study, children who wished to participate provided informed assent (see Appendix C), and the informed consent of their parents was received (see Appendix D). All responses remained confidential and children's names were changed in the final research paper.

The administration at the school district where this research took place expressed initial concerns about the use of video cameras as a research tool. Video cameras have the potential of capturing children misbehaving or disclosing sensitive information on camera. However, because the focus of this study was solely on how children experience birding club in terms of their environmental identity development, the school district granted approval for this study (see Appendix B).

Chapter 4: Results

Spatial Autonomy versus Environmental Shame

Descending Wooden Steps

Children expressed spatial autonomy by exploring different ways of moving within nature. This was captured on Sensory Tour during the first day of birding club when children walked on a boardwalk, climbed a boulder, and went down cutout steps. The following video segment depicted Kali and Beth as they walked down a series of wooden steps cut into a hillside at the beginning of a trail:

> "*I love the steps. I don't know why, I just love them*," said Kali, as she walked down the wooden steps.
>
> "*I know. I like to stay on this part*," replied Beth, as she walked on a narrow stretch of sloped ground to the left of the steps.
>
> "*Oh, that sounds like fun. Wait, let me come in*," requested Kali, as she paused for Beth to pass her so she could go behind Beth on the dirt trail to the left of the steps.

Here, Kali and Beth displayed spatial autonomy by developing their own preferred method of descending the stairs. The method was independent from the ways that their peers and adult authority figures took the stairs. According to Green (2018b), this may have boosted their sense of confidence and contributed towards a heightened sense of freedom in the outdoors. As Kali noted, it also made birding club more "*fun*."

Navigating a Boardwalk and Climbing Boulders

Another example of spatial autonomy development was shown when children walked on a boardwalk and climbed on a boulder. In the following Sensory Tour video, children walked single-file on a section of boardwalk. The boardwalk consisted of a series of two planks of wood

placed side-by-side. Kali walked in line behind another child as she explained for the camera her method of walking on the boardwalk:

"*I like to do this...*" said Kali, as she placed one foot directly in front of the other, staying entirely to the left side of the boardwalk.

"*... Or this. I probably do this more*," continued Kali, as she walked with her left foot placed on the left boards and her right foot placed on the right boards. Again, Kali was confident enough to try different ways of walking on the boardwalk and come up with her own preferred method. In doing so, she strengthened her sense of independence, or spatial autonomy, in the outdoors (Green, 2018b).

As children continued down the boardwalk, a few of them spotted an aquatic animal in a small pond. The animal quickly disappeared from sight. Everyone tried unsuccessfully to get another glimpse of the animal, and after a brief pause, I asked children to resume walking back to school. As they began walking away, Jed confidently jumped onto a large boulder along one side of the boardwalk and turned to look around. Terri followed suit by jumping onto the boulder along the opposite side of the boardwalk. From on top of the boulder, Teri paused to look back towards the pond where the aquatic animal resided.

Green (2018b) discussed the significance of children climbing natural structures, similar to these boulders, during a study that took place outdoors at preschool. According to Green (2018b), climbing natural structures both literally and figuratively "[elevated children] above adult authority figures and their peers" (p. 81). This, in turn, boosted the climbers' sense of self-confidence in nature, and ultimately led to a greater sense of spatial autonomy (Green, 2018b).

During the video-stimulated recall, I played back the video of children interacting with the boardwalk and boulders and asked them to comment on their experiences. The following comments were made following playback of the video:

"*I was on the rock*," said Jed.

"*Did you like going on the rock*? I asked.

"*Yes*," replied Jed.

"*So I saw Kali kind of doing some interesting movement. She was like this on the boardwalk...* " I said as I modeled the different ways that she walked.

"And then I saw Jed and Teri jumping up on the rock. What did you think of that, being able to do some of those outdoor movements, use the rock, use the boardwalk?" I asked.

"*I think it was fun! But also we were able to see cool stuff on the rocks*," elaborated Sara.

"*I think walking on the boardwalk and doing different movements on it and getting up on the rock actually gives you some exercise*," added Teri.

In this video-stimulated recall discussion, children identified that interacting with their environment in novel ways was not only fun but also provided a healthy dose of exercise and a new viewpoint from which to see nature. From this viewpoint, children have the potential to observe aspects of their environment that they might not observe otherwise. In this way, spatial autonomy, or a sense of freedom outdoors, may lead naturally to children becoming more competent in nature.

Environmental Competency versus Environmental Disdain

Avoiding Pushki

Children in birding club displayed environmental competency when they correctly identified pushki and knew to avoid developing rashes from it while on birding walks. Pushki

(*Heracleum lanatum*) is a type of plant that is native to the area (Alutiiq Museum and Archaeological Repository, n.d.). It can reach eight feet in height and can cause rashes when touched (Alutiiq Museum and Archaeological Repository, n.d.). In the following vignette, Levi walked back to school along a road after day one of birding club. He turned towards the side of the road and said:

"*Oh that's pushki, don't touch it, it hurts!*"

During the video-stimulated recall discussion, I played back this video clip and asked Levi how he identified pushki. Levi gave the following explanation:

"*Um, so, I can identify pushki from, well, first, there's fuzz coming off of it. And then second, at the top right below the leaves, there's these giant bulbs poking out, and it's like a bubble kind of. I think that's where they store the juice*," said Levi.

"*Yah*," agreed a number of other children.

The identification of local native plants and their traditional uses is part of the 3rd grade curriculum in this school district, which may help explain why children were able to correctly identify pushki. Without proper identification skills, children such as Levi would be more likely to accidently brush up against pushki, develop skin rashes, which may, consequently, lead to feelings of anxiety or mistrust towards nature. It is beneficial that Levi could confidently avoid rashes from pushki while birding. However, it is important to note that pushki has a number of traditional benefits to humans as well (Alutiiq Museum and Archaeological Repository, n.d.). According to Alutiiq traditions, the stem's flesh may be eaten, the roots made into a poultice, and the leaves used for preparing fish (Alutiiq Museum and Archaeological Repository, n.d.). None of these traditional uses were mentioned by either children or adults during birding club. Thus, a

follow-up educational activity to teach children about the benefits of the plant could strengthen their environmental identity development.

Knowing What to Pack

Knowing what to pack for outdoor excursions was another way that children displayed environmental competency while birding. When asked about her least favorite part of birding club, Sara gave the following response:

> "*Probably not over packing with boots, and all that stuff, and just leaving a jacket, folder, lunch, and bam, you're done*."

Sara entered birding club not knowing how to pack for outdoor excursions. On the first day of the club children were advised to leave behind any schoolwork and miscellaneous items in their backpacks unrelated to birding in the outdoors, but Sara chose not to go through her backpack. The result was a heavier and more uncomfortable backpack than was likely necessary. Rather than causing Sara to develop a sense of environmental disdain, this mistake made Sara re-evaluate her packing methods on future birding walks. As she became more competent at packing for outdoor excursions, the excursions themselves likely became much more fun, and she now describes packing for birding as so simple that, "*Bam, you're done*."

Nest Searching and Appreciation

Another way that children expressed environmental competency was in their ability to search for bird nests. Prior to the beginning of birding club, I scouted out a few trails ahead of time and located a bird nest in a spruce tree along one of the trails. During the first day of birding club, I then hinted to the children that there may be a nest nearby. The children looked inside the branches of various trees as I let them know they were getting closer to the nest. As

they approached the tree with the nest, Levi and Jed stooped down and circled the tree to look at it from all angles. Levi was the first one to spot the nest:

"I see it!" called out Levi.

"*You see it, Levi*?" I asked.

"*Don't touch it!*" reminded Jed, as he tried to lean in with Levi.

"*What?*" asked Jed.

"*There's no eggs in it, but I see it*," added Levi.

"*Wait, let me see it*," requested Sara urgently.

"*Can I see it?*" added Jed.

"*There's no eggs in it, though*," repeated Levi, as he stepped aside to let other children get a glance.

Levi then walked further along the trail. This time Jenny and Blake joined him as they continued to look for additional bird nests within the spruce trees. Levi raised his head to look higher into one particular tree, then bent lower to view inside its lower branches. "*This is like a perfect tree for a nest*," Levi exclaimed.

In the following exchange, I showed children the Sensory Tour videos of them nest searching and asked what they were doing in the video.

"*I was looking for the. . . nest*," said Levi.

"*For the nests*," added a couple more children in chorus.

"*Is that something you think you'll keep doing as you're out and about*?" I asked.

"*Probably*," relied Levi. "*I mean, because that's like a good tree to look in.*"

The tree that Levi looked into was a dense spruce tree. It was in close proximity to the other spruce tree that children just spotted a nest inside of. The fact that Levi identified this tree

as a good tree to look into meant that he developed an idea in his mind about what might constitute an ideal nesting site for a bird. His environmental competency seemed to have grown from his previous experience spotting a nest in a tree, and he applied his newfound skills towards different but similar situations. I then asked the children what they noticed and thought about the nest they saw:

"*It was like, you could. . . definitely fit eggs. The bottom was curved*," said Jenny.

". . . . *It was hidden well*," added Jed.

". . . . *What does that make you think about birds that they can make these curved nests that are really well hidden*?" I asked.

"*They're intelligent*," replied Sara.

"*They're really talented*," added Beth.

This exchange shows that, as the children became more competent with identifying bird nests, their appreciation for birds grew. From an environmental identity development perspective, instilling an appreciation for nature is important as it can contribute towards positive feelings of care and concern for nature and ultimately the desire to protect the environment by engaging in future environmental action (Clayton and Opotow, 2003; Green, 2018a).

Bird Identification Skills

As the video-stimulated recall discussion went on, I became curious about what the children felt it meant to be a competent birder. I therefore decided to pose the question, "*What's the most important part about being a birder*?" The following were their responses:

"*To see birds*," said Bruce.

"*Knowing about birds*," added Jenny.

". . . . *Probably being quiet*," commented Matt.

"*Um, when you see a bird that no one else here knows about, you can identify them for them*," finished Teri.

Matt's comment about "probably being quiet" suggested that his identity as a birder revolved around his sense of empathy towards birds. He understood that human-made noise could disturb birds, and as a birder, it was his job not to do this. Not disturbing the birds may have had an additional advantage of allowing Matt to get closer to the birds, and consequently increase his success at identifying them.

Aside from Matt who felt that birders were defined by their choice of behaviors around birds, the rest of the children expressed that knowledge of birds and competency at identifying them were key to birding. Sara summarized the importance of knowing how to identify birds when she commented on a video replay of a fox sparrow that flew overhead:

"*I was like, wow, I've been calling these things brown. . . birds*."

This quote highlights Sara's evolution as a birder. Prior to birding club, Sara thought of all such birds as just "*brown. . . birds*." As her knowledge of birds increased and her identification skills improved, however, she soon discovered a world of birds that was previously unbeknownst to her. Among these birds was the small brown fox sparrow, whose name and appearance suddenly took on a whole new meaning to her.

Identifying Rare Birds. Children expressed a special sense of pride in identifying rare birds, as if this made them especially competent as birders. Take the pigeon guillemot, for example. The pigeon guillemot is a type of sea bird that a number of children identified during their Sensory Tours with assistance of adults. During the video-stimulated recall discussion, Levi stated that he found this bird more interesting than others. When I asked him why he felt this way, Levi gave the following response:

"*Well, it's just, the harder it is to find, the more interesting it is because, like, if you don't see it as much, it's more interesting.*"

Identifying Bird Songs. Teri, on the other hand, gained a sense of competency by mastering the song of the golden-crowned sparrow. Not only did she learn to identify this bird species based on its song, but she also learned to imitate the song with whistling. During the video-stimulated recall discussion, I asked the class if they were able to identify the golden-crowned sparrow based on its song. Teri raised her hand emphatically in the air and broke out into a grin. I called on her and asked her to share. Teri gave the following response:

"*I knew it because when I listened to it, it sounded like 'oh dear me', so then I looked up which bird sounds like that.*"

Teri referred to the time that she used a bird identification guide that included photographs of locally occurring bird species along with comments about each bird's unique calls and songs. Under the photograph of the golden-crowned sparrow, there was a musical note with the words "oh dear me". When Teri heard a call that sounded like "oh dear me", she successfully used the bird guide to match this call to the bird.

Next, I asked Teri which birds she was most excited to see during birding club, and this is what she shared:

"*I think the most interesting one to me was the golden-crowned sparrow because I don't think I have ever heard a bird with such a soothing voice.*"

She then broke out into an imitation a golden-crowned sparrow's song during the video-stimulated recall discussion. This exchange suggests that, for Teri, her greatest sense of environmental competency while birding was not identifying rare birds, but rather, mastering bird songs. It makes sense that this would have such a strong impact on her environmental

identity development. After all, her mastery of bird songs set her apart from a large number of her peers in the group who may be able to recognize a few bird songs but could not replicate them. Teri not only gained a sense of competency in her ability to master bird songs, but she also found them to be "soothing". This suggested that bird songs provided a source of emotional comfort to Teri.

Blake also received acknowledgement from his peers based on his ability to identify birds by sound. When a pine siskin called nearby, Blake used the bird guide to look up which small birds occurred in forested habitats. When he guessed that the bird might be a pine siskin, I played the pine siskin call on my phone app and, sure enough, they quickly realized that the two calls matched. This made Blake smile a lot and seemed to impress his peers, who continued to recall the time that he correctly identified the bird's call. The children reminisced about this event during the video-stimulated recall discussion, when Levi reminded us:

"*Blake figured out a bird by just guessing.*"

In reality, Blake's guess was not purely random. He used the bird guide to narrow down the possible birds it could be, before taking a guess from the options that were left. Regardless, it is clear that Blake gained positive notoriety from his peers based on correctly identifying a bird call. This likely boosted his confidence while birding and contributed to a stronger sense of self-identity in nature.

Coping with Frustrations while Birding. Positive bird identification is not always possible. This is especially true for children who are new to birding and have never used binoculars or birding guides before, as was the case for many of the children in this club. Whether the children develop a sense of environmental competency or disdain may depend on

how they balance their desire for competency with the disappointment that came with not being able to correctly identify a bird.

To better understand this quandary, I asked the children during the video-stimulated recall discussion if they ever felt frustrated when others saw a bird that they could not. Blake, Kali, Jenny, and Beth responded that, "*yes*," they felt frustrated at times, while Caroline nodded her head in agreement. Kali agreed with me that perseverance was important when birding. When asked if they ever felt frustrated enough that they did not want to bird, no children agreed, and Jenny, Beth, Teri and Kali replied, "*no*." This response showed that, even though there were moments when the children felt incompetent at birding, feelings of temporary incompetency did not lead the children to develop a sense of environmental disdain.

Binoculars were particularly difficult for some children to master. Bruce, Teri and Jenny reported feeling frustrated by binoculars. Of these three children, only Jenny reported that she was unable to use binoculars correctly during the entire time at birding club. Jenny was also the only child who made it to only one day of birding club, suggesting that it is important to engage in multiple days of birding in order to get past any initial hurdles with using specialized birding equipment. The other children reported that their binoculars worked some of the time.

In order to gain a deeper understanding of how different children dealt with feelings of frustration, I played back segments of video during the recall discussion. In one such video, a group of children observed some kind of aquatic animal as it briefly swam across a pond and out of view, while another group of children struggled to understand what everyone else was looking at. Kali was one child whose video revealed that she struggled to see the animal, and as I played back the video, I asked her how she felt at the time:

"*I was half frustrated and not because I didn't see it for the first part and then second part I did. On the trail, I didn't see it for a while, and then I did, and then I saw it on the [video recording devise] too*," said Kali.

Later on, I asked Kali how it feels when someone you are birding with sees something that you do not. Her response was, "*Oh well*." This quote embodies the sort of wisdom it takes to develop from a beginner birder into someone who is more advanced. While the ability to correctly identify animals is important, expecting to be competent at identification 100% of the time is unrealistic and can lead to feelings of environmental shame, or the desire to avoid further interactions with nature. Instead of quitting birding, it is important to work through these feelings of frustration and incompetency. After all, according to the environmental identity development model, it is only by working through the inner-tensions presented at each stage of development that a greater sense of inner-unity can be achieved (Green, 2018a). Kali exemplified this in her video. She clearly wanted to spot the animal at the same time as her peers and was initially frustrated by her inability to do so, but she did not let this frustration get the best of her. Instead she chose to persevere with birding, and in the end she successfully caught a glimpse of the animal on video.

Kali's perseverance with birding paid off, as there were plenty of times that she successfully identified birds on her own. In the following video recording, a bird was heard singing in a bush. After hearing the bird, I used my phone app to let the children listen to an example of a fox sparrow song. The children compared the two songs and agreed that the bird they heard singing in the bush was a fox sparrow. From their bird guides they also knew that fox sparrows were medium-sized forest birds with brown markings and a spot on their chests. Still,

not all children could locate the bird in the bushes. This clip shows Kali's excitement at successfully spotting the bird with her binoculars:

"*Oh, it's exactly like the one from the picture*," beamed Kali, referring to the photograph in the bird guide.

"*Oh, I see it*!" exclaimed another child in the background.

"*I can see its mouth moving*," whispered Kali.

"*So if you weren't able to see it, Don has a picture, you can look at his picture*," I suggested, referring to the adult helper Don. Don brought along his digital camera with a telephoto lens. Knowing this, I requested that he take a photo of the bird so that others could see it on the camera's digital display. I hoped that, by looking at the photo, children who were unable to locate the bird using their own binoculars would still gain a sense of competency at matching the bird in the photo with the birds in their birding guides.

"*I saw it*," shared Kali, implying that she did not need to look at Don's camera. "*That was so*…"

"*I like the eyes*," added Beth.

"*I know*," agreed Kali.

"*. . . And then look at the fox sparrow again in your guide*," I suggested, reminding children to make the connection between the bird they saw in the bush and their field guide.

"*I'm not going to, I already saw it good*," Kali said proudly.

"*Yeah, you saw it well*?" asked Shelly, another one of the adult helpers.

"*Yeah*," replied Kali.

"*I like the eyes*," shared Beth.

"*Yeah*," agreed Kali.

"*What color were the eyes*?" asked Shelly.

"*They were blackish, but the eyes were really small, or like brownish, and really cute*," commented Beth.

"*Yeah, they're really cute*," added Kali.

"*I always knew that there was a green stuff hanging down*," said Kali, referring to the green lichen located above where the bird was perched. "*So I'm like, oh, just look down if I lose her*." Kali was explaining her strategy of locating the bird in her binoculars.

"*Yep, that was a good way to find them*," complimented Shelly.

"*Yah, because they were really camouflaged*," added Kali.

In this exchange, Kali described the strategy she used to locate the fox sparrow in the bush. It was clear that she took great pride in her ability to locate the bird on her own without the assistance of the birding guide or Don's camera. According to Kali, this was especially impressive given the fact that the bushes camouflaged the bird. Because she was able to spot the bird through her binoculars, she was also able to appreciate the bird's finer details such as its eyes, which she had never noticed before. This encounter likely enhanced Kali's sense of environmental competency as well as her sense of admiration towards birds, both of which lend themselves well towards the desire to engage in future environmental action for birds.

Angering the Birds

There were many times when children expressed environmental competency during birding club. Occasionally children expressed environmental disdain, however, which is the opposite of environmental competency. Environmental disdain occurs when children show

disrespect towards the environment. The following Sensory Tour depicts an example of what might be interpreted as environmental disdain. In this clip, Kali and Beth eagerly listened for bird songs as Levi walked along nearby, whistling.

"*Shh. Sh sh sh sh sh sh*," said Kali in a stern voice, trying to quiet Levi so she could hear the birds better.

"*Maybe I can make it so mad it attacks*," commented Levi, as they continued to walk down the road together.

Kali and Beth both laughed in response to Levi.

"*I need a live video of a bird attacking a person. I could post it on YouTube*," continued Levi.

Kali and Beth continued to laugh as they walked alongside Levi. The group neared the entrance to a trail that branched off from the side of the road. As they turned to go down the trail, the topic of conversation quickly changed to recounting their previous experiences on this trail.

During this video clip, Levi communicated his desire to make a bird attack a person in order to post it on YouTube. This comment suggests a degree of environmental disdain, or disrespect, towards birds (Green, 2018a; Green et al., 2016). However, it is not clear if Levi really felt this way about birds or if he was sarcastically joking. The comment did make Kali and Beth laugh, meaning that if humor was his intention, he succeeded. It is also not certain whether Levi would make these comments without the presence of the video camera. His comment suggested he was aware of the video camera he was wearing, so it is likely that the camera had some influence on his behavior at that time.

While Levi's behavior in this instance suggests he might harbor some degree of environmental disdain towards birds, there were other times at birding club when Levi displayed environmental competency. For example, Levi quickly learned how to search for nests within spruce trees and was adept at identifying pushki in order to avoid developing rashes from it. This dichotomy highlights the social complexity of environmental identity development. An individual may be environmentally competent in one social situation, but express environmental disdain in another (Stapleton, 2015; Green, 2018a).

Environmental Action versus Environmental Harm

Decorating Birdhouses

One of best ways to determine if a child has a healthy and fully developed sense of environmental identity is whether or not they take pride in engaging in environmental action or environmental harm. There were multiple occasions during birding club that children engaged in environmental action. For example, after becoming competent at finding bird nests and developing a deeper appreciation for their functions, the children spent the last day of birding club painting birdhouses to be placed along the trail. Painting nesting boxes was my idea, but children were eager to participate and they took pride in their work. They carefully considered what patterns would best camouflage the boxes from predators. Children also expressed the desire to observe birds as they used the nesting boxes in future years of birding club.

Discovering Trash in the Woods

The concept of environmental harm came up during our first trail excursion. As the children walked along a trail near our school, a group of them noticed a pile of trash that had accumulated in the woods. The following was a conversation Jenny and Blake had with one of the adult chaperones, Shelly. It was captured on video camera.

"*Oh my gosh*," Jenny exclaimed, as she looked over at the pile of trash in the woods.

"*So gross. I feel bad when people do that*," commented Shelly.

"*Eww*!" added Jenny.

"*I know*," empathized Shelly.

"*Look, there's a jacket*," commented Blake.

"*It's so beautiful here*," mused Shelly.

"*It is, but…*" countered Jenny.

"*And then they…*" continued Shelly.

"*People litter*," finished Blake.

Blake and Jenny were clearly saddened by the sight of litter in the woods. What's more, Shelly, the adult volunteer, did a great job of engaging in this discussion and validating their feelings about litter. I wanted to know how the rest of the children felt about the environmental harm that litter creates, so I showed this Sensory Tour footage to the children during the video-stimulated recall discussion and asked how it made them feel:

"*Hurt*," said Bruce.

"*Nasty*," commented Jenny.

"*Kind of sad*," added Blake.

"*Sad? Why were you sad*?" I asked.

"*Because I don't really like people littering outside*," continued Blake.

"*Oh, because birds could die from that*!" exclaimed Jenny. ". . . . *Because they can eat it and…*"

Seeing litter caused strong emotional reactions in these children. They used words such as "hurt", "nasty", and "sad" to describe their feelings about the environmental harm they

witnessed. Jenny took these feelings a step further by imagining the negative impact that litter could have not just on the environment in general but on birds in particular, especially if they were to eat the garbage. This implied that Jenny felt a sense of empathy towards birds and was especially considerate towards their needs and wellbeing.

From an environmental identity standpoint, it would be empowering for children to help correct the environmental harms that they observe around them. Unfortunately, birding club only lasted for five days, and we did not have time to go back and pick up litter. Regardless, I wanted to know if this was something the children would be interested in doing in the future, and if they would find this sort of environmental action fun to do.

"*Not as fun*," said Levi.

"*Fun*!" exclaimed Jenny and Jed.

"*I like picking up trash*," added Kali.

"*Yah, fun*!" Jenny agreed.

Aside from Levi who felt that picking up trash would not be fun, the rest of the children either did not offer their opinions or were eager about this possibility. Future years of birding club should provide children with the opportunity to identify environmental harms that affect birds, such as littering, and take positive environmental action against these harms. The ultimate goal would be that as these children get older, they are both able and willing to engage in environmental action even without the support of the club structure.

How Close is Too Close?

The line between environmental action and environmental harm is not always as clear as it is with littering. For example, during the birding walks there were multiple instances where a child was tempted to encroach on wildlife to have a better look. When this occurred, one of the

adults in the group would remind the child not to unnecessarily disturb the animals. In the following segment taken during the video-stimulated recall, I showed a video of Levi stepping off of the boardwalk and moving towards an aquatic animal that swam across the water. I then asked him to reflect on this experience:

"*Levi, you were trying to get pretty close with it, what were you thinking with getting close to it*?" I asked.

"*Well, I bet I could, if I was closer with binoculars I bet I could see it a little better*," Levi responded.

"*Yeah, I bet you're right, if you were closer. What do you think if all eleven of us went closer?*" I asked.

"*It would scare it away,"* said Levi.

"*Like, maybe like, two people go up and try to see it from two different trees, or something*," Beth shared.

"*It's just cool if you go close to it because if you are far away from it, it just looks like a brown blob*," commented Bruce.

Here, children presented reasons for and against encroaching on wildlife. The benefits of encroaching on wildlife include an improved ability to identify animals, which relates to one's sense of environmental competency. Drawbacks, however, include the potential to cause unintentional environmental harm by scaring animals away. In order to make informed decisions about how close is too close, children must be able to weight these pros and cons and consider not only their own needs and desires, but those of the animals as well. The ability to make these decisions requires a certain amount of knowledge about and empathy towards animals, as well as

critical thinking skills. This came to light when Levi posed the following question during our discussion:

"*How close is too far*?" asked Levi.

"*I'd say probably like, okay, say that this is a bird. Have to stay like…* " said Sara as she stood up and backed up a bit in the classroom.

"*That's too close. Even though the bird would be fine*," said Jed.

"*At least 20 feet away*," finished Sara.

"*Good, and if this bird is up at the top of a tree, do you think it is going to flush*?" I asked.

The class responded enthusiastically with a "*No!*"

"*What if it is on the ground with a nest? Is that going to scare it*?" I continued to ask.

The children now responded with a "*Yes!*"

"*So it might depend on what a bird is doing, right, how close you can get to it. Do you think after this club, if you saw a bird nest, would you try and give it a little more space maybe*?" I asked.

A number of children responded with "*Yes! Yeah*!"

"*I'd be like, bird nest*!" Sara said as she put her arms out to the side in a halt motion.

"*Would you go over to it now, Sara*?" I asked.

"*No, I'd be like, bird nest*!" Sara said, as she acted out backing up slowly away from the nest.

"*I'd just run to you*," said Bruce.

These examples show that, while the children had a clear desire to be close to wildlife, a number of children recognized that encroaching was not always the right thing to do. By sharing

these thoughts with their peers, the children made a positive impact on the peer culture of the group (Green, 2018a). Whether or not these children apply what they learned to the next time they see a bird is hard to say, as established behaviors take time and repetition to overcome (Green, 2018a). With continued modeling from positive adult role models and support from peers, however, these children may continue solidifying healthy habits for interacting with wildlife (Green, 2018a).

In particular, Bruce's comment that he would run to an adult if faced this dilemma suggests that, while he is receptive to continued guidance from adult role models, he is not yet ready to independently navigate environmental dilemmas. Bruce will require continued reassurance that he is capable of engaging in his own critical thinking. He will also need encouragement when he does take initiative to plan, act and reflect on his environmental actions (Green, 2018a). The ultimate goal is that, through this process, children such as Bruce may one day be able to engage in this process independent of adults (Green, 2018a).

Harvesting or Protecting Salmonberries?

Another moral dilemma that surfaced during birding club was whether or not it is harmful to harvest nectar from salmonberry flowers. Salmonberry bushes grow naturally in this area and are considered a delicacy. Not only can nectar be sucked out of their flowers, but they also produce delicious berries once pollinated. Jenny, in particular, spent much of her first day of birding club picking salmonberry flowers along the trail, sucking the nectar out of them, and discarding the leftover flowers. This upset a number of her peers who tried to dissuade her from picking the flowers, to no avail.

Sara also sucked nectar out of salmonberry flowers on the first day of birding club, but unlike Jenny she did not pick the flowers and she only harvested nectar a few times. In the

following Sensory Tour interaction, Sara sucked nectar out of a salmonberry flower while it was still on a bush, and Kali and Beth argued with Sara about her decision to harvest the nectar:

"*No, Sara, you can't do that*," scolded Kali.

"*I always do that*," replied Sara.

"*No, you can't though*," continued Kali.

"*I pollinate them*," said Sara defensively.

"*No, you can't though*," said Kali adamantly.

"*Sara...*" added Beth in a firm tone.

"*You can't. That's like, sucking their nutrients out of it*," continued Kali.

"*But I learned... in my survival class in camp...*" defended Sara.

"*Yeah but, not right now, because you're not like dying, or like lost, or...*" said Kali.

"*Yeah but, dude, I pollinated a ton, and then I....*" justified Sara, with a sad tone of voice.

"*They're trying to grow raspberries and you're just sucking the [nutrients]…*" said Kali.

"*They're not called raspberries*," corrected Beth.

"*I mean, salmonberries*," said Kali.

"*Dude, my parents said that you're actually pollinating them*," continued Sara.

"*Yeah, it's just, it's sucking the nutrients out of them*," repeated Kali.

In this example, Sara defended her actions by explaining that she was pollinating the flowers and was only doing what she learned from camp and from her parents. In Sara's mind, she did not feel like she was engaging in environmental harm, but rather environmental action by pollinating flowers. Kali, meanwhile, was adamant that Sara's behavior harmed the plants, and was not afraid to take action in the form of trying to educate her peer. Beth seemed to side with Kali during this argument, although she only minimally expressed her opinions.

By the end of this exchange, Kali and Sara still disagreed about whether or not Sara engaged in environmental harm. The fact that they were both willing to discuss this situation in such detail, however, shows that they cared about the environment, even if their understanding of what constitutes environmental harm differs. This example also highlights the role that peers can play in trying to regulate the behavior of one another with regards to perceived environmental harm.

Brown Bears

No direct evidence of brown bear activity was observed during birding club. Nonetheless, brown bears are prevalent in this community and were on many children's minds during portions of birding club. The children's reactions to brown bears ranged from feelings of environmental shame, environmental disdain, and environmental competency, which is why I have created a separate section of this paper for brown bears.

The strong feelings children harbored towards brown bears were apparent on the first day of birding club as I directed them to leave the school by going under the yellow caution tape on the playground. The caution tape was put up after bear activity was reported in the neighborhood. Its purpose was to keep children from using the area of the playground nearest to the woods during school hours. Because we would walk along trails near the woods for birding club, we went under the caution tape. This led to strong reactions from a number of children. The following scenario was captured on Sensory Tour video as the children went under the caution tape:

"*Ooh!*" exclaimed a number of children.

"*Danger zone*," said Jenny.

"*Oh my gosh, it's toxic*," added Jed.

"*We can, if a bear attacks us, we can burn its eyes*," suggested Levi.

"*And it's on video*!" pointed out Kali.

"*Well, we would have a video of a bear attacking us*," continued Levi.

"*Now that would be cool*," shared Teri.

In this exchange, children appeared to react with environmental disdain, or disrespect, towards brown bears. Levi, in particular, made light of the situation by suggesting they burn a bear's eyes out, and other children fed off of this idea by suggesting they get the attack on video. By joking around about bear attacks, I suspect that these children were avoiding much deeper feelings of fear towards brown bears. To get to the bottom of their feelings, I showed the children this clip during the video-stimulated recall discussion and asked them the following questions:

"*What were your thoughts or feelings about birding and bears*?" I asked.

"*Scared*!" said Jenny.

"*Were you feeling scared that whole time or just going under*?" I asked.

"*Just going under the caution tape*," replied Jenny.

"*Well, it's probably not a trait but cautious about going under there*," added Matt.

"*What about the rest of the time when we were walking? Did you kind of forget that caution or was it in the back of your mind*?" I asked

"*Probably forgot it*," said Matt.

"*I felt spontaneous*," said Levi.

"*One thing in the back of my mind, I was like, am I allowed to do this in the summertime now*?" wondered Sara.

"*I would say safe*," shared Bruce.

"*What made you say safe*?" I asked.

"*Because we had four grownups, so…*" added Bruce.

During this discussion, a number of children revealed the predominant feeling they experienced while going under the tape was not hostility towards bears but fear. On the one hand, the children wanted to experience spatial autonomy by exploring the outdoors within a relatively safe club environment. On the other hand, they were gripped by feelings of environmental shame, or anxiety in nature, brought on by concerns about brown bears. Fortunately, the comfort of birding in a group with grownups helped ease many of these fears. How these fears might manifest themselves outside of club hours, however, remains to be seen.

Kali and Beth expressed an elevated sense of environmental competency in bear country. During their Sensory Tour, someone mentioned something inaudible to Kali. She replied with the following:

"*Don't worry about that*," said Kali.

"*Bears don't eat humans*," continued Beth.

"*They should be scared, they are scared of us*," finished Kali.

In this exchange, Kali and Beth expressed confidence in their ability to stay safe in bear country. In addition, they tried to persuade their peers not to be unnecessarily afraid of bears. By imagining how bears must feel when encountering a large group of humans, Kali and Beth displayed empathy towards other creatures in the natural world.

The Desire to Continue Birding

There is no point in an individual's life where their environmental identity is beyond developing. Regardless of where a child is currently at, environmental identity development can always progress through repeated positive outdoor experiences. In this manner, environmental

identities are continually revisited. It is promising, therefore, that a number of children expressed the desire to observe wildlife outside of birding club. For example, during the first day of birding, a group of children noticed what appeared to be some sort of aquatic animal swimming across a small pond alongside a trail near our school. This led to endless speculation about what type of animal it was, and a number of children wanted to go back at a later date to find the answer. The following is one such conversation that took place during the Sensory Tours:

"*I should ask, for pizza Friday, we have it over at Lizzie and Joe's house. That's their house…*" Beth said as she pointed to the house across the street.

"*I'm going to ask if we could walk in the trail and see that river otter or beaver again,*" Beth continued.

This exchange demonstrated that Beth not only had the desire to get back out into nature, but she was willing to take the initiative to ask her family to join her as well. In seeking additional outdoor opportunities, Beth will continue to develop her sense of environmental identity, and may help in the development of her family members' identities as well. Beth further expressed this sentiment during the video-stimulated recall discussion when I asked her what she was thinking when she saw the fox sparrow.

"*That I should go on the trail more often,*" said Beth.

"*Yeah,*" added Kali.

Another way children expressed a willingness to continue birding on their own was with regards to their writing logs. Children were given writing logs during the first day of birding club. The logs were a place where they could record important information about bird sightings and keep track of life lists of bird species seen. These guides were theirs to keep and take home

after the club was over. When I asked the children about their writing logs, Sara, Kali and Teri expressed that they were already using them outside of club hours.

"*I've been using the [writing] log and I've seen a bunch of magpies so I'm like, that's it, I'm going to write about these magpies*!" exclaimed Sara.

It is clear that a number of children left birding club feeling enthusiastic about continuing their outdoor pursuits, but I wanted to know just how many children now considered birding to be an important part of their environmental identities. To determine this, I finished off the video-stimulated recall discussion by asking the children to raise their hand if they felt like they were now a birder. Of the eleven children, nine children raised their hands, Jed raised his hand and stood up emphatically, and Bruce gave a so-so signal with his hand. When asked if they would like to join another birding club in the future, the children gave a resounding, "*Yes!*" Levi added, "*You should do another birding club, for 4th and 5th grade*!" In terms of any advice they had for kids who considered joining a birding club, this is what they had to share:

"*Try it*!" exclaimed Jenny.

"*You have to try it*," added Kali.

"*If they thought that something might happen, I would tell them that they should not be scared, that nothing would happen to them as long as they have adults with them*," continued Teri.

"*I would say, hey, do you like to walk outside? Well why don't you go to birding club*!" added Sara.

"*I would tell them to try it*," finished Levi.

Chapter 5: Discussion

The Environmental Identity Development Model Applied to Birding Club

How did children experience environmental identity development in this birding club? The experiences of children in birding club aligned well with the proposed environmental identity development model. Children experienced mistrust in nature when they were temporarily overwhelmed by fears of brown bears and only had negative thoughts about pushki. Aside from these two areas of concerns, children were largely past the foundational stage of trust versus mistrust in nature, having previously established trust in their environment. Inhabitants of this rural, isolated island community in southcentral Alaska tend to live within close proximity to nature. Many families engage in recreational or subsistence hunting and fishing. It is not uncommon to see bald eagles flying overhead or Sitka black-tailed deer crossing the road. At school, fieldtrips and units of study further expose children to the island's unique flora and fauna. What's more, the type of children who volunteer to join birding club likely gained an interest in nature from a young age. Because the children already established a strong foundational trust in nature, most of their development was focused on navigating the dilemmas presented by the following three progressions.

Children experienced spatial autonomy (the first progression of environmental identity development) when they descended wooden steps, navigated boardwalks, and climbed boulders. These experiences made birding club more enjoyable to children while simultaneously strengthening the children's sense of identity in nature. They also led naturally towards children developing competencies in nature. For example, by climbing a boulder, children achieved an alternate vantage point from which to identify wildlife.

The majority of growth for these 3rd grade children involved the second progression of development, which is their sense of environmental competency. Environmental competency was enhanced during birding club in a number of ways. Children utilized plant identification skills to avoid pushki rashes, learned which essentials to pack for outings, became familiar with nest searching, and learned bird identification skills including how to identify rare birds and birds by sound.

The third and final progression of a healthy environmental identity development involves environmental action. Children experienced environmental action in birding club when they decorated birdhouses and decided not to encroach on wildlife. However, the children still have a lot of potential growth with regards to this stage, especially if birding club expands to be offered in 4th and 5th grade as these children requested.

As I began this research process I was aware that my roles as researcher, 3rd grade teacher and leader of birding club may have some impact on the responses that these children gave. I did not realize just how much the positive relationships I formed with the children prior to the beginning of birding club likely predisposed them to birding. When I opened the club for children to join there was more interest than I expected, and after the first day of enrollment the club was already full. I believe that the children were so eager to join birding club partly because we had already formed such close relationships. All of the children were aware of my passion for birding long before birding club began, and some of this passion likely rubbed off on them. Also, I previously introduced my classroom students to birds through a number of science and arts-based activities that they enjoyed.

What does this say about environmental identity development? This example illustrates how the identity development of children can be enhanced by establishing positive relationships

with adult role models. Researchers have already shown that social factors play an important role in the expression of environmental identity (Stets & Biga, 2003; Clayton & Opotow, 2003). It makes sense, then, that club leaders who develop strong social bonds with children in their clubs can further enhance the children's receptiveness towards healthy environmental identity development.

Ways to Improve the Education of Children at this Birding Club

Engaging in Environmental Action

In order to better support environmental identity development, the club should be restructured in future years to allow more opportunities for children to engage in environmental action. For example, a number of children identified trash along the trail while birding. This was brought to everyone's attention during the video-stimulated recall discussion. During that discussion, the group as a whole expressed an interest in going back and picking up trash. However, by the time the discussion occurred, birding club was already over and there was not enough time to pick up the trash. In future years, I would like to rectify this.

One way to accomplish this may be to designate the last day of birding club as an environmental action day. During each day of birding, children would be asked to identify any areas where they saw need for environmental improvement. After agreeing upon one or more courses of action that should be taken, children would carry out improvements on the last day of birding club.

This is similar to how children spent the last day of this year's club decorating nesting boxes. However, I came up with the nesting box idea on my own prior to the club even beginning. Ideally, children should be the ones that identify environmental needs, brainstorm possible solutions, and reach a consensus about which action(s) to take. Adults should play a

supporting role here, but it is the children who should take ownership over the problem-solving process. Doing so will increase the children's sense of confidence and self-motivation, as well as bring them one step closer towards being able to independently engage in environmental action without the support of a club structure.

There are a number of locally relevant environmental issues affecting this community that children may want to help address. One of these issues is oceanic trash, which is prevalent and commonly washes up onshore. There are beaches located within walking distance of the school. These beaches could be visited during birding club, and the visits may lead naturally towards conversations about the effect of litter on oceanic birds and ways to help solve this problem.

Another way to engage children in locally-relevant environmental issues includes asking representatives from the US Fish and Wildlife Service to visit birding club and share information about the tern nesting habitat that is located out the road. In past years, off road vehicles have destroyed this habitat during nesting season. It is possible that, after hearing about this issue, children may be compelled to help solve this problem as well.

Avoiding Unhealthy Forms of Development

In order to nurture healthy environmental identity development, it is also important that children avoid unhealthy forms of development. Specifically, children in this birding club expressed aspects of unhealthy development with regards to brown bears. They were only concerned with the negative effects of pushki and disagreed about what constituted harm towards salmonberry bushes. Birding club could help children as they navigate these tensions.

A number of children did not feel comfortable with the thought of brown bears, and a few children behaved disrespectfully towards bears. Continuing brown bear education both within

the general education classroom and within birding club will be important, especially given the high number of brown bears that live within close proximity of this community. Education should focus on better understanding brown bears, including their diet and behavior, in order to demystify them and make them more relatable to children. It should also focus on ways to live in close proximity to brown bears and what to do if you ever encounter a brown bear. These are skills and knowledge that the 3rd graders were already exposed to in the general education classroom. However, it takes a lot of time and practice to internalize these lessons and become confident in brown bear country (Green, 2018a; Green et al., 2016). Furthermore, not all of these lessons can be taught strictly in the classroom setting, as outdoor experience is necessary to develop a deeper sense of trust in nature (Green, 2018a; Green et al., 2016).

In terms of pushki, the children were already aware of the plant and knew how to avoid rashes from it. However, there is more to pushki than its ability to cause rashes. The third-grade curriculum in this school district includes teaching about the traditional Alutiiq uses of native plants such as pushki. However, neither adults nor children referred back to these uses during birding club. Instead, children only expressed a negative view of the plant, perceiving it as significant simply because of its potential to cause rashes.

It would benefit these children to continue to learn about and internalize the unique role that pushki plays in the local environment, especially given how common the plant is. Club leaders should support this by reiterating the ways in which the native Alutiiq people traditionally utilize pushki. In doing so, children may develop a well-rounded view of not only pushki, but of nature in general.

On numerous occasions, children discussed the ethics of harvesting salmonberry flowers. This created tension between the children who felt that salmonberry flowers were okay to harvest

and the children who wanted to protect the flowers from harm. In order to help children navigate this tension, club leaders could educate children about the life cycle of the salmonberry plant and the role that flowers play in this cycle. Children could also read newspaper clippings or invite an elder into the club, in order to learn about how the native Alutiiq people utilize salmonberries sustainably. This would help children reach a consensus about how to treat salmonberry bushes.

Another area for potential growth is in education about what to pack for the outdoors. Sara expressed that she initially had issues with packing. While she overcame these issues on her own with no permanent harm done, it would be best to support children by more formally teaching them how to pack for outdoor adventures. Future birding clubs should include not only a discussion about what to pack for birding in the outdoors with an emphasis on wilderness safety, but also the creation of a packing checklist that children could follow during each day of birding.

Time for Discussion

The video-stimulated recall session engaged children in discussions about topics that were relevant to their environmental identity development. Examples of the types of discussions that occurred included how close was too close to get to birds, whether it was okay to harvest salmonberry flowers, and if it would be a good idea to pick up trash along the trails. These discussions not only provided insights into the children's current state of environmental identity development, but they also served as opportunities to further enhance healthy development. Children were able to share knowledge they gained, debate the thought processes behind their actions, and consider the possibility of taking future action for the environment. All of this likely helped strengthen their sense of environmental identity development.

Rather than leave this type of discussion for after birding club is finished, it would be beneficial to provide time for discussion at the beginning (5 minutes) and end (10 minutes) of each birding session. The beginning time could be spent reviewing objectives for the day as they relate to healthy environmental identity development. These objectives should be based on topics that children identify as relevant to their lives and to the local environment. They may include such locally relevant topics as how to avoid pushki, behave in bear country, harvest berries sustainably, or safely pick up trash. At the end of each day children would evaluate their progress with regards to these objectives and provide suggestions for future improvement. They may also share out questions, concerns or comments about any new environmental identity topics that arose that day.

More Children and Different Grade Levels

This was the first year that birding club was offered at this school, and it was only offered to eleven 3rd graders. All of the children expressed a desire to continue birding at the end of birding club. From an environmental identity development perspective, it is important that these children are offered a birding club to join in 4th and 5th grade so they can continue to develop their environmental identities in healthy ways.

A number of 3rd graders were saddened to hear that they could not join birding club because it was already full after only one day of sign-ups. Demand far exceeded the club capacity. In future years, opening the club up to more children would be beneficial as it would allow more children to be positively influenced by birding club.

Another change to explore would be inviting parents to join birding club along with their children. The presence of additional adults would mean that more children could safely join the club. Parents would bring along their own insights and expertise that could enhance birding

club. By engaging parents in birding club, children may gain additional support with continued birding at home outside of club hours. An additional benefit may be the enhancement of parents' environmental identities as well.

Areas of Focus for Additional Birding Research

Additional research could explore how children in other grade levels, such as 1st or 5th grade, experience environmental identity development in birding clubs. For example, most growth for these 3rd graders centered on their sense of environmental competency. It is possible that establishing a foundation of trust versus mistrust in nature is more significant to the development of 1st graders, or that 5th graders tend to be most focused on engaging in environmental action for birds. Research could shed further light on this. It would also be beneficial to explore how children experience birding club while accompanied by their parents. This type of study would shed additional light on the social influence that parents, as well as peers and non-familial adult authority figures, have on environmental identity development.

Applications for Environmental Education in the Elementary Grade Classroom

The results of this study provide insight into how children experience environmental identity development. These insights can be applied not only to improving birding clubs but also to the broader realms of environmental education in the general education classroom. The following are takeaway lessons that can be applied to environmental education in the elementary grade classroom.

Assessing for Environmental Identity Development

By the conclusion of birding club, I better understood the needs of the children in terms of their environmental identity development. However, time at birding club could have been more productive if I had understood the specific needs of these children as they entered the club.

That way I could have tailored each lesson to better meet their unique environmental identity development needs, rather than waiting for the next year of birding club to be able to fill in any gaps in their environmental identity development. The same lesson applies for teaching about environmental identity development in the general education classroom.

In the general education classroom, teaching environmental identity development ought to be approached with an analytical method like any other subject. Teachers should begin the school year by pre-assessing their students in order to determine which stages of the environmental identity development model they are strongest in and any areas of tension or dilemma that still need to be overcome or revisited. According to Green (2018a, p. 11), "missing cognitions need, and should, be revisited and enhanced through sustained, meaningful experiences with nature." Teachers can support their students in this process, but only if they know where those missing cognitions lie. As the school year progresses, teachers should continually monitor their students and use this data to inform their instruction.

An environmental identity development assessment may involve engaging the class in an outdoor activity. During this activity, the teacher observes the students' interactions with one another and their environment. Afterwards, the teacher leads a discussion, encouraging students to share their own observations, thoughts and feelings based on the experiences they had outdoors in nature. Students evaluate themselves based on different criteria. One method to do this involves each student using either a thumbs up, thumbs sideways, or thumbs down to indicate how students feel about or whether they agree with a statement. The teacher then analyzes both their own observations and the student responses in order to determine which areas of the environmental identity development model need the most focused instruction going forwards.

Explicit Teaching of Perseverance and Empathy

During birding club, I noticed that certain character traits were imperative for children to continue to develop both as birders and as individuals with healthy environmental identities. These character traits were perseverance and empathy. Without these traits, children's predisposition would be to give up on birding, and they would lack the desire and know-how to care for birds' wellbeing. They would not be able to overcome the tensions that are inherent at each stage of the environmental identity development model, and would ultimately not have the impetus to engage in action for the environment.

There were numerous examples of children persevering at birding club, and without this perseverance, children would not have been capable of birding. Children exhibited perseverance when they could not find a bird with their binoculars but kept trying and did not give up. They persevered when they packed too much for the first day of birding club but continued going to club and eventually learned how to pack only the essentials. They persevered in spotting hard-to-find birds, such as the pigeon guillemot, and took extra pride when they found them. Finally, they persevered when they felt frustrated about not finding an aquatic animal, but kept looking, and eventually a number of them found it.

It makes sense that perseverance is a character trait that is key to both birding and to the environmental identity development model. The environmental identity development model is characterized by negotiating a series of outer dilemmas and internal tensions at each stage of the model (Green, 2018a). These dilemmas and tensions cannot be overcome without feelings of discomfort, and perseverance is required in the face of discomfort (Green, 2018a).

The expression of empathy was also critical to the children's success at birding club. Successful birders not only know how to identify birds, but they also take care not to cause them

undue harm. This requires a great deal of empathy. Students exhibited empathy when they said it was important not to disturb birds by making too much noise. They expressed empathy when the sight of litter on the ground made them feel "bad," "hurt," "nasty," and "kind of sad." They empathized with nature when they imagined how their movements might scare birds away. They expressed empathy when they wanted to protect salmonberry flowers from being eaten because they were "trying to grow raspberries." Finally, they empathized when they realized that bears might actually be scared of humans, and not just the other way around.

Empathy is not only key to birding club, but also to individuals' environmental identity development (Green, 2018a). Empathy is defined as "being able to feel what someone else is feeling" (Green, 2018a, p. 17). When children are empathetic, they are more likely to want to help others. In terms of the environmental identity development model, this can manifest into children acting for the environment, which is the ultimate progression of environmental identity development (Green, 2018a),

How can this be applied to the general education classroom? Educators should focus instructional time on teaching the character traits of empathy and perseverance to students in their classrooms. They should encourage students to recognize and apply these character traits to not only core subjects such as reading and math, but to all aspects of their life, including their environmental identity development. Throughout this process, students should be informally assessed on how well they are persevering and empathizing while in nature, and these assessments should further drive instruction.

Providing Students with Greater Sense of Agency

During birding club, I noted that it was important for children to experience freedom of movement, independent of their teachers and peers, in order to achieve spatial autonomy (Green,

2018a). Children experienced freedom of movement when they came up with novel ways to descend wooden stairs, navigate a boardwalk, and climb boulders. By achieving moments of spatial autonomy, children both had fun at birding club and gained confidence in their ability to be independent in nature (Green, 2018a).

Similar lessons can be applied to the classroom. As students begin to master new skills, teachers should gradually release responsibility onto the students. This allows students to continue to grow while improving their sense of independence and self-confidence. Flexible seating options in the classroom is one way that students can achieve a sense of spatial autonomy. Students may start the school year with assigned seats, but as they demonstrate they are capable of working independently, they gain more choice of seating. Eventually, students should be able to initiate their own choice of seats in the classroom, knowing that they must choose to sit somewhere that they can successful complete their studies.

Building Relationships to Strengthen Learning

Finally, teachers can better support their students' learning by engaging in relationship building. Relationship building between students and positive adult role models is important to healthy environmental identity development (Green, 2018a). As I noted from birding club, my enthusiasm for birding likely rubbed off on the children, which made birding a very popular after-school club. The same should be true for all subjects taught in school. Educators should make a point of expressing their interest in all subjects and engaging in learning alongside their students. They should provide an example for students on how to be a lifelong learner. Similarly, teachers should make a point of discovering the unique interests of each of their students, so that teachers can find commonalities to bond over and better support their students with their passions.

It is also important that teachers provide opportunities for students to develop meaningful relationships with nature. This occurred during birding club when Teri mastered the song of the golden-crowned sparrow. Not only did Teri gain a sense of competency, but she also made a personal connection to that bird species. Connections such as these are so important to strengthening children's environmental identity development. According to Sobel and as quoted in Green (2018a, p. 19), "children [should] have the opportunity to bond with the natural world, to learn to love it and feel comfortable in it, before being asked to heal its wounds." The same is true for the classroom.

One way that teachers can support their students in developing meaningful connections with nature is by allowing their students to spend time extensively studying one species of plant or animal. Ideally the species should be locally occurring, and students should have the chance to see it for themselves in nature. This would increase students' motivation to learn. The course of study should include not only researching facts about their species, but also writing and sharing about their feelings, showing appreciation for the species through artwork, and engaging in a culminating project that allows the student to act for the benefit of the species. By learning about nature through a species of animal that students grow to care about, a strong foundation is set for future environmental action (Green, 2018a).

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Appendices:
Appendix A
Institutional Review Board Approval

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May 2, 2019

To:	Carie Green Principal Investigator
From:	University of Alaska Fairbanks IRB
Re:	[1292248-3] Environmental Identity Development in an Environmental Education-Based After-School Birding Club

Thank you for submitting the Amendment/Modification referenced below. The submission was handled by Expedited Review. The Office of Research Integrity has determined that the proposed research qualifies for exemption from the requirements of 45 CFR 46. This exemption does not waive the researchers' responsibility to adhere to basic ethical principles for the responsible conduct of research and discipline specific professional standards.

Title:	Environmental Identity Development in an Environmental Education-Based After-School Birding Club
Received:	April 8, 2019
Exemption Category:	7
Effective Date:	May 2, 2019

This action is included on the June 5, 2019 IRB Agenda.

Prior to making substantive changes to the scope of research, research tools, or personnel involved on the project, please contact the Office of Research Integrity to determine whether or not additional review is required. Additional review is not required for small editorial changes to improve the clarity or readability of the research tools or other documents.

Appendix B

Letter of School District Approval

Kerry Irons is the principal of the school where this research was conducted. She sent me the following letter verifying the school district's support of this research project. In the letter she references receiving verbal approval for me to conduct the research from Mr. Larry, the school district's superintendent.

Re: Written consent for research - Katie Wallace 2/3/19, 6:59 PM

Re: Written consent for research

Kerry Irons

Fri 1/18/2019 11:31 AM

To:Katie Wallace <katie.wallace@kibsd.org>;

Katie, don't worry about the written consent. I asked Larry's secretary, and she said he gave verbal approval and that's enough. I just now called again to confirm, and she said to proceed with the next steps. Thanks!

Kerry

From: Katie Wallace <katie.wallace@kibsd.org>
Date: Friday, January 18, 2019 at 8:59 AM
To: Kerry Irons <kirons01@kibsd.org>
Subject: Written consent for research

Hi Kerry,

I was wondering if you have heard anything about getting written consent for the research? I spoke with my research advisor and she said that I could include the written consent as a supplementary document with my IRB proposal. It should probably be signed, then. As soon as I get it, I can apply for IRB approval, which should take around 1.5 – 2.5 months to get.

Thanks!

Appendix C

Child Assent Form

Assent Form
Environmental Identity Development in an Environmental Education-Based After-School Birding Club

IRB #: 1292248-3
Date Approved: May 2, 2019

Who is doing this project?
My name is Katie Wallace. I am a 3rd grade teacher at North Star. I teach an afterschool Birding Club. I am a student at the University of Alaska Fairbanks.

What is this study about?
I am doing a study on kids in birding clubs. The goal is to learn about your experience in birding club. You are asked to join this study because you are in birding club.

What will I do?
If you are in this study, you will be invited to wear a small video camera on your head. The camera will record what you say and do at the club. You will also get to watch the videos with your classmates. I will ask you questions about what you were doing in the videos. I will video record our conversations about the videos.

Can this study hurt me?
This study should not hurt you or make you feel bad. If you feel bad, you can stop anytime. You can tell me that you do not want to video that day. Nothing bad will happen to you if you stop videoing.

I will write a story about what you do on the videos. This story may be published in a book or magazine. I will also share it with my professors and other teachers . I will not use your real name in the story.

What do I get for being in the study?
We will have a pizza party at the end of bird club. We will watch your videos during our party. The party will have free pizza and drinks.

Is it my choice?
You get to choose if you want to be in the study. You also get to choose whether you want to wear a camera. Your parent will also need to give permission. Even if your parent says it is ok, you do not have to be part of the study. Even if you think you want to be in the

study now, you can change your mind later. You will be asked to stop videoing if you break club rules. You must be safe and kind on video.

Please ask me any questions you have about the study. You can ask me in person or have your family call me at 907-987-9957, or email me at kmmoeller@alaska.edu.

I know what this study is about. I want to be part of this study.

_____
Child's Name

_____
Date

Appendix D

Parent/Guardian Consent Form

Parent/Guardian Consent Form

Environmental Identity Development in an Environmental Education-Based After-School Birding Club

IRB #: 1292248-3
Date Approved: May 2, 2019

Who is doing this project?
This project is done by Katie Wallace. I am a 3rd grade teacher at North Star Elementary School. I am the head of Birding Club here. I am also a graduate student in the School of Education at the University of Alaska Fairbanks, under the direction of Dr. Carie Green. This project will partially fulfill the requirements of my M.Ed. in Elementary Education.

What is this project about?
This is a research study about environmental identity. The goal of this study is to learn how participation in a birding club can change how children view themselves in relation to the environment. You are being asked for permission for your child to take place in this study. I ask because your child is a 3rd grader who will be attending birding club at North Star Elementary School this year. Please read this form carefully. Ask me any questions you may have. Take the opportunity to discuss the study deciding whether or not to participate.

What is my child being asked to do?
If you and your child decide to take part in this study, your child will be asked to:

- Wear a video camera during the outdoor portions of birding club. This will be for about 40 minutes per birding club session. The video camera will record what your child says and does. I will review this video footage and select parts to show to your child. I may include direct quotes and observations from the video footage in my final research paper.
- Meet with myself one extra time after school, once birding club is over. This will last for no more than one hour to review parts of the videos. I will show video clips to your child and a few other children from the club. I will ask them questions such as: What were you thinking about when you watched the movie? What did you notice? What did you hear? What did you see? What are you wondering about? What was your favorite part? This session will be video recorded. Direct quotes from this video may be used in my final research paper.

Are there risks for my child?
There are minimal risks in this research. However, your child may feel slight discomfort in wearing the recording device. I will do my best to adjust the fit on your child and ensure they are comfortable. If your child does not want to wear the camera they will not be made to do so. Additionally, your child can stop wearing the camera at anytime by simply finding me and asking me to turn off the camera. If your child is not following the rules of birding club or appropriately using the video cameras, I may ask them to stop video recording.

Are there benefits for my child?
The benefits to your child if they take part in this project are that they may know that their work helped contribute to research on the benefits of participating in birding clubs. Their voice will be shared through direct quotes in the final published research paper.

Will my child get anything for being in the project? I will give your child a pizza party at our final meeting after the end of birding club when we meet as a group to look over and talk about the footage. Free pizza and drinks will be provided during this time.

Will people know that my child was in the project? Any information obtained about you or your child from the research will be kept confidential. Any information with your or your child's name attached will not be shared with anyone outside the research team. If a report, paper, or presentation is written about this research your child's real name will not be used.

Does my child have to be in this project? Your decision to take part in the project is voluntary. You are free to choose whether or not to take part in the project. If you and your child decide to take part in the project, you can

choose to stop at any time or change your mind and ask to be removed from the project. Whether or not you choose to participate, will not affect your child's acceptance to birding club or school standing.

Who can I call if I have questions about the project?
If you have any questions, you may contact me by email at kmmoeller@alaska.edu, or by phone at 907-987-9957. You can also contact Dr. Carie Green, my graduate advisor at UAF, if you have any concerns or questions about this research. She can be reached by email at cjgreen2@alaska.edu, or by phone at (907) 474-5516.
The UAF Institutional Review Board (IRB) is a group that examines research projects involving people. This review is done to protect the rights and welfare of people involved the research. If you have questions or concerns about your rights as a research participant, you can contact the UAF Office of Research Integrity at 474-7800 (Fairbanks area) or 1-866-876-7800 (toll-free outside the Fairbanks area) or uaf-irb@alaska.edu.

Environmental Identity Development in an Environmental Education-Based After-School Birding Club

PLEASE RETURN THIS FORM TO KATIE WALLACE BY (AN EXACT DATE TO BE DETERMINED).

I agree to be in this project.
I understand the procedures described above. My questions have been answered to my satisfaction. I agree to allow my child to participate in this project. I have been provided a copy of this form.

☐ Check here if you allow your child to be video-recorded.

_____ _____
Child's name Child's age

_____ _____
Printed name of parent or guardian Phone number of parent or guardian

_____
Signature of Parent/Guardian and Date

Appendix E

Verbal Explanation of the Assent Process

Prior to beginning the first Sensory Tour, I verbally explained the assent process to children in the following way:

> Each day, I will ask you if you want to take video. If you do, I will place the video camera on you. If it does not feel right, let me know. I can try to fix it. Once you have the video camera on you, you get to lead a video tour. That means you can choose what to look at, say or do. Remember that the purpose of this video is to share how you experience nature while in birding club. As you video record, you must follow the rules of birding club. The video recording equipment is expensive. It needs to be treated with care and respect. Also make sure that your actions you are recording are safe and that you are respectful to others while on video. If you do not follow the rules of birding club to act in a safe and respectful manner, I may ask you to take off the video recording equipment. Later on, I will look at this video. I may pick parts of it to share with others from club who used the video camera as well. You all will watch parts of the videos and comment on them. Your work from the videos and your comments may be used in a final paper I will write about birding club. Your image and name will not be shared. If you have any questions about the video cameras, let me know. I can also take them off of you at any time if you want.